

## Abstract

This invention intends to provide a long life member for air motors (rotor cylinder material, front cylinder cover material, rear cylinder cover material or the like) having more greater and uniform Vickers hardness than usual and excellent in abrasion resistance, shock resistance and thermal impact resistance. For this purpose, in this invention, a contact surface of a vane-surrounding member with vanes is heated at 450 to 580°C in the mixed gas atmosphere comprising 50 to 95% of hydrogen, and 5 - 50% of nitrogen and 0.01 to 99 parts by volume of hydrogen sulfide based on 100 parts by volume of nitrogen, a DC voltage at 300 to 500 V is applied relative to an anode disposed in a vacuum chamber and a nitrosulphurization layer having mean value for the Vickers hardness of 800 to 1200 with a larger difference between the mean value and the maximum value or the minimum value being 100 or less, is formed on the surface of contact with the vanes by using a bright nitrogen diffusion method.